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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,762	08/03/2001	Takashi Kitaguchi	212135US2	5946
22850	7590	06/29/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			STOCK JR, GORDON J	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,762

Applicant(s)

KITAGUCHI ET AL.

Examiner

Gordon J. Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20010803.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file and received on January 30, 2002.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on August 3, 2001 has been considered by the examiner.

Drawings and Specification

3. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: S4 of Fig. 3; 25 of Fig. 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. Drawing 3 is objected to for the following: in S5 "Three-Dimentional" should read – Three Dimensional--. Correction is required.

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5. The specification is objected to for the following: on page 15 line 1 “magneitic” should read –magnetic–; on page 3 line 25 “softwar4e” should read –software–; on page 23 formula (1) only demonstrates the use of Px of vector 23 of line 1 of page 24 and does not represent the use of Py and Pz. Corrections required.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1, 4, 5, 10, 12-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kitaguchi et al. (6,038,074)—cited by applicant in view of Gu et al. (6,639,685) and Iddan et al. (6,765,606).**

As for **claims 1, 10, 13, 16**, Kitaguchi discloses the following: a picture taking part comprising one camera (Fig. 4: 1); a picture taking position specifying part for detecting a position at which said picture taking part takes the picture of the object, and generating position information specifying the position (Fig. 4: 3-5); a three dimensional coordinate calculating part (Fig. 5: S5); a three dimensional shape composing part using a composite image from one camera at two locations (Fig. 2; Fig. 4: 8; Fig. 19: s109-s110); with computer and software for

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performing tasks (col. 30, lines 20-25); and a storage part (col. 33, lines 60-65). As for a projecting part, Kitaguchi is silent. However, Gu discloses a projecting part for projecting a pattern for measuring contour (Fig. 1: 12) and Iddan in three dimension imaging system teaches using a projecting part with a line pattern for 3D imaging (Fig. 1: 22 and 30). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the system comprise a projecting part in order to calculate three dimensional coordinates of objects being imaged.

As for **claims 5, 15, 20**, Kitaguchi discloses the following: a picture taking part comprising one camera (Fig. 4: 1); a picture taking position specifying part for detecting a position at which said picture taking part takes the picture of the object, and generating position information specifying the position (Fig. 4: 3-5); a three dimensional coordinate calculating part (Fig. 5: S5); a three dimensional shape composing part using a composite image from one camera and several coordinate points (Fig. 2; Fig. 4: 8; Fig. 19: s109-s110); with computer and software for performing tasks (col. 30, lines 20-25); and a storage part (col. 33, lines 60-65). As for a projecting part, Kitaguchi is silent. However, Gu discloses a projecting part for projecting a pattern for measuring contour (Fig. 1: 12) and Iddan in three dimension imaging system teaches using a projecting part with a line pattern for 3D imaging (Fig. 1: 22 and 30). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the system comprise a projecting part in order to calculate three dimensional coordinates of objects being imaged. As for using a plurality of cameras, Kitaguchi is silent. However, Iddan in a three dimension imaging apparatus discloses using two cameras for three dimensional imaging through dual wavelength triangulation that is relatively simple and robust (col. 13, lines

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5-25; col. 2, lines 35-45; col. 3, lines 34-50). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the system comprise two cameras in order to perform three dimensional imaging through dual wavelength triangulation.

As for **claims 4, 12, 14, 19**, Kitaguchi in view of Gu and Iddan disclose everything as above (see **claims 1, 10, 13, 16**). Kitaguchi does not disclose a three-dimensional image generating part generating a three-dimensional image of the object in accordance with coordinates of the object obtained by said three-dimensional coordinate calculating part and an image obtained when the light having the predetermined pattern is not applied to the object by said picture taking part. However, Gu discloses that four phase-shifted fringe patterns are used in the image analysis (col. 19, lines 25-30). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the system and method comprises and uses a three-dimensional image generating part generating a three-dimensional image of the object in accordance with coordinates of the object obtained by said three-dimensional coordinate calculating part and an image obtained when the light having the predetermined pattern is not applied to the object by said picture taking part such as three other phase patterns in order to generate a three dimensional image of the four different phase patterns.

As for **claims 17, 18**, Kitaguchi in view of Gu and Iddan disclose everything as above (see **claim 16**). In addition, Kitaguchi discloses an acceleration sensor, magnetic sensor, and angular velocity sensor to detect a rotational angular velocity around each coordinate axis of the three dimensional coordinate system (col. 10, lines 35-45; col. 15, line 15-30; Fig. 25; 186-188; col. 36, lines 1-35).

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9. **Claims 2, 3, 6, 7, 8, 9, and 11**, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kitaguchi et al. (6,038,074)**—cited by applicant in view of **Gu et al. (6,639,685)** and **Iddan et al. (6,765,606)** further in view of **Hamada (6,369,899)**.

As for **claims 2, 6, 11**, Kitaguchi in view of Gu and Iddan disclose everything as above (see **claims 1, 5, and 10**). Kitaguchi does disclose a storage part (col. 33, lines 60-65). He is silent concerning timing controlling parts for the picture taking part that are external. However, Hamada in a camera with projector for selectively projecting pattern lights teaches timing generator for controlling the exposure time of the camera which is external to the camera (col. 10, lines 35-47). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the individual picture taking parts have timing controlling parts external to the camera in order to control exposure for picture acquisition. As for a signal converting part, Kitaguchi is silent. However, Gu in an image processing method for gathering contour measurements discloses a signal converting part to convert analog to digital (col. 14, lines 50-62). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a signal converting part in order to acquire digital pixel data through analog to digital conversion.

As for **claim 3**, Kitaguchi in view of Gu and Iddan disclose everything as above (see **claim 2**). In addition, Kitaguchi discloses an interpolation part, a convergence part and correction part (Fig. 8: S15 and S16).

As for **claim 7**, Kitaguchi discloses the following: a picture taking part (Fig. 4: 1); a picture taking position specifying part for detecting a position at which said picture taking part takes the picture of the object, and generating position information specifying the position (Fig.

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4: 3-5); a three dimensional coordinate calculating part (Fig. 5: S5); a three dimensional shape composing part using a composite image from one camera at two locations (Fig. 2; Fig. 4: 8; Fig. 19: s109-s110); with computer (col. 30, lines 20-25). As for a projecting part, Kitaguchi is silent. However, Gu discloses a projecting part for projecting a pattern for measuring contour (Fig. 1: 12) and Iddan in three dimension imaging system teaches using a projecting part with a line pattern for 3D imaging (Fig. 1: 22 and 30). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the system comprise a projecting part in order to calculate three dimensional coordinates of objects being imaged. As for the camera comprising the projecting part, they are silent. However, Hamada in a camera with projector discloses a camera with projecting part for three dimensional information retrieval (Fig. 1: 1). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the camera comprise a pattern projector in order to have a more compact device.

As for **claim 8**, Kitaguchi in view of Gu and Iddan and Hamada disclose everything as above (see **claim 7**). In addition, Kitaguchi discloses an interpolation part, a convergence part and correction part (Fig. 8: S15 and S16).

As for **claim 9**, Kitaguchi in view of Gu, Iddan, and Hamada discloses everything as above (see **claim 7**). In addition, Hamada discloses a computer controls the projector system (Fig. 5: personal computer).

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

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1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

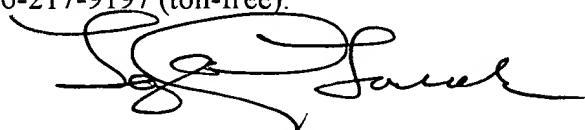
The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


gs

June 27, 2005


Layla Lauchman
Primary Examiner
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